OCCUPATIONAL INJURIES AND DISEASES IN ALBERTA

Downhole and other Oilfield Services 1995 to 1999

Upstream Oil and Gas
Sub-Sector #5

Alberta
HUMAN RESOURCES
AND EMPLOYMENT

August 2000

Performance and Applied Research
Alberta Human Resources
and Employment
2nd Floor
10808-99 Avenue
Edmonton, Alberta
T5K 0G5

Phone: (780) 427 - 8531
Fax: (780) 422 - 5070
E-Mail Address:
commshare@lab.gov.ab.ca
Alberta Human Resources
and Employment website:
http://www.gov.ab.ca/hre

TABLE OF CONTENTS

1. Introduction 2

2. Sub-Sector Description 3

3. Lost-Time Claim Rates and Duration Rates 9
   3.1 LTC Rates By Industry 9
   3.2 LTC Rates by Size of Employer: 1999 12

4. Analysis of the Lost-Time Claims 13
   4.1 Nature of Injury 13
   4.2 Type of Event/Exposure 14
   4.3 Part of Body Injured 15
   4.4 Source of Injury 16
   4.5 Duration of Disability 17

5. Characteristics of the Injured Worker 18
   5.1 Occupation of Injured Worker 18
   5.2 Age of injured Worker 19
   5.3 Length of Time Employed 19
   5.4 Gender of Injured Worker 19

6. Cost of Claims and Employer Premiums 20

7. Occupational Fatalities 21

8. OHS Investigated Occupational Fatalities: 1995 to 1999 22

Appendix A: Terms, Definitions, and Formulas 24

Appendix B: Upstream Oil and Gas 1999 Industry Codes 25

1. Introduction

The Mission of Alberta Human Resources and Employment

One of the missions of Alberta Human Resources and Employment is to work in partnership with Albertans to promote safe and healthy workplace, a quality working life and comprehensive safety systems. To this end, Alberta Human Resources and Employment recognises that monitoring health and safety in Alberta will help to ensure primary workplace health and safety concerns are actively managed and prioritised, and resources directed where most needed.

This report summarises the lost-time injuries and disease descriptions, characteristics of the injured worker and the risk of injury to workers in Alberta's upstream oil and gas industries for the years 1995 to 1999. Cost of the injuries and revenue in terms of total premiums paid by employers. Finally, a summary of occupational fatalities accepted by the WCB for compensation and brief descriptions of fatalities investigated by Occupation Health and Safety are also provided.

The purpose of this report is to provide government, employers, workers and health and safety officers in upstream oil and gas industries with information about the industry key health and safety issues.

Description of Upstream Oil and Gas Industries

The upstream oil and gas industries can be subdivided into the following sub-sectors.
Exploration, Oilfield Maintenance and Construction, Well Servicing with Service Rigs and Power Swivels, Drilling of Oil and Gas Wells, Oilfield Downhole and Other Services, Tar Sands, Petroleum Producers, and Oilfield Trucking Services.

The next section gives the descriptions of the Oilfield Downhole and Other Services sub-sector.

2. Sub-Sector Description

Sub-Sector # 5: Downhole & Other Oilfield Services

Field Production Operators (Industry # 06305)
This industry covers the "contract" operation of upstream oil and gas production/processing facilities not classified elsewhere. This is primarily a labor service contracted to oil and gas producers for the routine day to day operation of facilities such as those described in industry 6300, including the operation of gas plants.

This is normally a daily responsibility. The duties of oil field production or gas well and battery operators will vary with different companies. Some may only be responsible for checking wellhead equipment. Others may work entirely at the battery and a majority of operators look after both wellhead and battery. If enhanced recovery methods are used on the well, Field Production Operators may operate these units in addition to their other duties.

Duties also include taking pressure and flow reading at the oil well, seeing equipment is runniing properly, checking flow lines, reading meters, looking for leaks, and may also involve working at the treater plant where samples may be required and reading needed on the levels of oil, gas, water and the addition of chemicals to the unit. At the water disposal unit, meters and gauges are checked, which measure pressure and water capacity levels to ensure there is sufficient space to hold the water coming in from the treating unit. At oil storage tanks, operators check pressure, storage capabilities and levels of the tanks. When gas is involved operators check the Christmas tree which controls the flow and pressure of the well. They inspect valves, take readings of gauges, temperature, pressure and flow rate.

The operators and their helpers are responsible for routine maintenance and light housekeeping duties only when a condition of the contract to operate the facility.

Vacuum Removal-Industrial, Commercial, and Oil Field (industry # 06306)
This industry includes the vacuum truck removal or recovery of industrial by-products, pollutants, hydrocarbons, toxic waste and other liquid waste from oil wells, gas wells, refineries, heavy oil extraction plants, chemical plants and other industrial plants sites. It also includes the cleaning up of fertilizer, grain, sulphur and other dry waste products from industrial and commercial sites such as elevators and rail car derailment sites. Septic tanks and farm waste removal is also part of this industry.

Equipment used ranges in size from a single axle truck with small tank storage and moderate pumping power, to tandem and larger trucks with larger tank capacity and powerful pumping units.

The major feature of this industry is to recover and remove products from an employer's work site. The transportation of the product is an integral part of the services provided. This industry includes hydro-trenching/hydro-excavating where water is applied under pressure to the ground creating a mud/slurry which is simultaneously vacuumed up by a truck, equipped with both vacuum and water ejection apparatus and holding tank. The purpose is to expose pipe/utilities for further trenching and excavating without causing pipe ruptures.

Mud Logging (Industry # 09900)
Employers engaged in hydrocarbon well/mud logging are included in this industry. Hydrocarbon well/mud logging is a procedure used in oil field drilling to log the strata and other pertinent details on a well during the drilling process.

Drilling mud is a mixture of pulverized barite, clays, chemicals and other various substances. Mud tanks and pumps are used to circulate the mud down the well bore during drilling operation. In addition to bringing cuttings to the surface, drilling mud cools and lubricate the bit and drill stem, protect against blowouts by holding back subsurface pressures, and deposits a mud cake on the wall of the borehole to prevent loss of fluids to the formation

A geological technician sets up at the drill site. Samples of drill cutting and gas, entrapped in the mud, are analyzed and the data recorded. They also analyze drill bit performance, rate of penetration and other information related to the drilling operations as required by the oil company. Log data and details are turned over to the oil companies for further study, and decisions concerning the drilling operations are made. Equipment used to conduct the analysis includes chromatographs, total gas analyzers, U.V. box and microscopes.

Pressure Cleaning Services (Industry # 09902)

These are mobile cleaning services conducted with the use of truck-mounted tanks equipped with pressure pumps that eject water, steam, air or hot oil for industrial, commercial or oilfield cleaning purpose.

Industrial and commercial applications will be cleaning of dirt, oil, grease or debris from anything ranging from buildings and plant equipment to rail cars and mobile equipment as well as flushing sewers and drains.
In the oil field, high pressure air, water or steam is used to remove sand, wax and other debris from well site production equipment and storage tanks. This industry also covers pressure services using steam and hot oil treatments to clean paraffin from well casing and includes flush by services where truck mounted masts are used to lift sucker rods to allow a flush of the well.

Hot oil, water and steam treatments can be used for thawing of oil field equipment, storage tanks as well as pipe lines, water and sewer lines.

Rathole Drilling and Service Rig Anchoring (Industry # 09904)

Prior to setting up a drilling rig to drill oil and gas wells it is necessary to drill a starter or conductor hole as well as holes for pipe stands known as rat and mouse holes. This is done with truck mounted drilling rigs. This industry is also used to cover the rig anchoring operations which install ground anchors primarily to secure service rigs during operations and also to secure flare stacks.

The oil company, or contractor arranges site survey and access to the area, and indicates where the holes are to be drilled. Unlike drilling or service rigs, where sections of the drill stem are used, a one piece truck mounted auger is used in these operations. Three holes are drilled from 16 to 36 inches in diameter depending on requirements.

A conductor hole is drilled to a depth of 30 to 40 feet (the deepest may be 60 feet, but this is rare). A 16 or 19 inch pipe, or casing is put into the hole and cemented around the outside to hold it in place. The conductor hole is the main drill hole that the drilling rigs start their drilling operations in.

Anchoring is relatively new industry which was spawned by changes to safety regulations governing the set up of service rig. Rig anchoring services are completed with the use of truck mounted equipment, which will screw an auger type piece of iron into the ground until solid base is reached. The anchor is pull tested at 15 to 20,000 lbs. Safety cables are then used to secure service rigs or flare stacks to the anchors. Anchoring companies do not usually fasten the cables.

Oil field Downhole Services (Industry # 09911)
This industry covers a wide spectrum of oilfield downhole services related to well completion, stimulation, testing and wireline services. This industry does not cover well servicing operations with the use of well servicing rigs. Employers in this industry usually offer a multitude of the above service to their clients with a variety of equipment, down hole tools and truck mounted units.

Services in this industry can include:

Directional drilling services involve only the supply of equipment and specialized supervision to the oil company. This work is done during the drilling process with the physical work or actual drilling done by the drilling crew.

Wireline services involve lowering special instruments into the well for testing purpose. A wireline may also be used to pull instrument or scrape debris out of the well.
Oil and gas well perforating involves lowering explosive device into the well on a wire line. When the required depth is reached, the device is detonated by an electric current. The explosive perforates the well casing, allowing the flow of oil at different levels.

Well testing activities include testing production levels. Production testing is performed by compressor equipment, usually truck mounted, which introduces water, air, or nitrogen into the line under high pressure and records information on pressure instruments. A separator may also be used to test flow or proportion of gas/oil and water in the flow.

Smaller hand held recording instruments may also be used for testing purposes. Dynamometers are surface instrument used to test downhole pumps and pump jack performance. Echometers are a downhole instrument used to log fluid levels and require the discharge of blank shell to generate shock waves which are then recorded.

After a shot hole has been drilled, the hole is usually never used again and must be closed for environmental reasons. Shot hole cementers place a plug part way down the hole, then fill the hole with cement from the plug to the surface. *Cementing* also involves pumping cement downhole to secure the well casing.

Fracturing is the process of forcing, under high pressure, a mud-sand slurry with carbon dioxide or nitrogen to expand or fracture the formation, allowing the oil or gas to escape the well.

Chemical treatment involve forcing/injecting stimulation fluids into the well casing to clear contaminants, remove paraffin and hydrates for well stimulation.

Under balanced drilling is a down hole process where lighter drilling fluids are used to lubricate the drilling bit and drill stem. The purpose of this process is to reduce cost and reduce the need for well stimulation in completing the well.

Well Casing Services (Industry # 09915)
This industry is intended to cover those employers who engage in a variety of services related functions on active drilling rigs.

Employers classified in this industry may engage in any one or more of the following activities:

Oil and Gas Well Power Tong Operations: Involves the use of large truck mounted hydraulic tongs to screw together or break apart sections of pipe (or casing) when being placed in, or removed from the drill hole.

Hydraulically operated Snubbing Units: units are truck mounted and are used to move tubular products in and out of the oil or gas well which has pressure at the surface ("live well"). There is a hydraulic jack which clamps on to the pipe to control and overcome the forces on the tubular goods exerted by the well bore pressure. By moving the jack up and down, and releasing and resetting the clamps, the tubulars can be put into or removed from the well bore. The second part of the snubbing units are the blow-out preventers which are also hydraulically operated and are used to control the pressure on the well. Snubbing services are used primarily in work overs and well completions; however, drilling contractors may also require their services.

Cleaning of Pipe Threads at Well Site: prior to the casing being placed in the well hole, the pipe threads must be cleaned. Well casing crews clean the pipe threads using varsol, wire brushes and rags.

Transport Pipe at Drill Site: Pipe (or casing), found on a pipe rack approx. 100 feet away from the drilling rig, is transported to the rig floor by a carrier suspended on a wire cable running from a winch permanently mounted on a truck. These units used to transport the pipe are referred to as pickup/lay down units.

Torque Monitoring: using a gauge or a computer monitoring system the amount of torque applied when joining two joints of pipe together by means of power tong is monitored and controlled.

Employers that install blow-out preventers are also included in this industry.

Servicing Christmas Trees on Oil Wells by Means of a Tree Saver (Industry # 09921)

An oil well "Christmas tree" is a series of pipes and valves that are situated on the well head after drilling of the well has been completed. This equipment need to be protected when fracturing a well.

The tree saver is a heavy gauged piece of pipe (approximately 2 metres long, 5 centimetres in diameter and weighs 90 kilograms), which is inserted through the Christmas tree and into the well tubing to prevent the fracturing fluid from wearing away at the valves and parts of the Christmas tree. The saver is held in place by means of a bolted coupling and rubber sleeve.

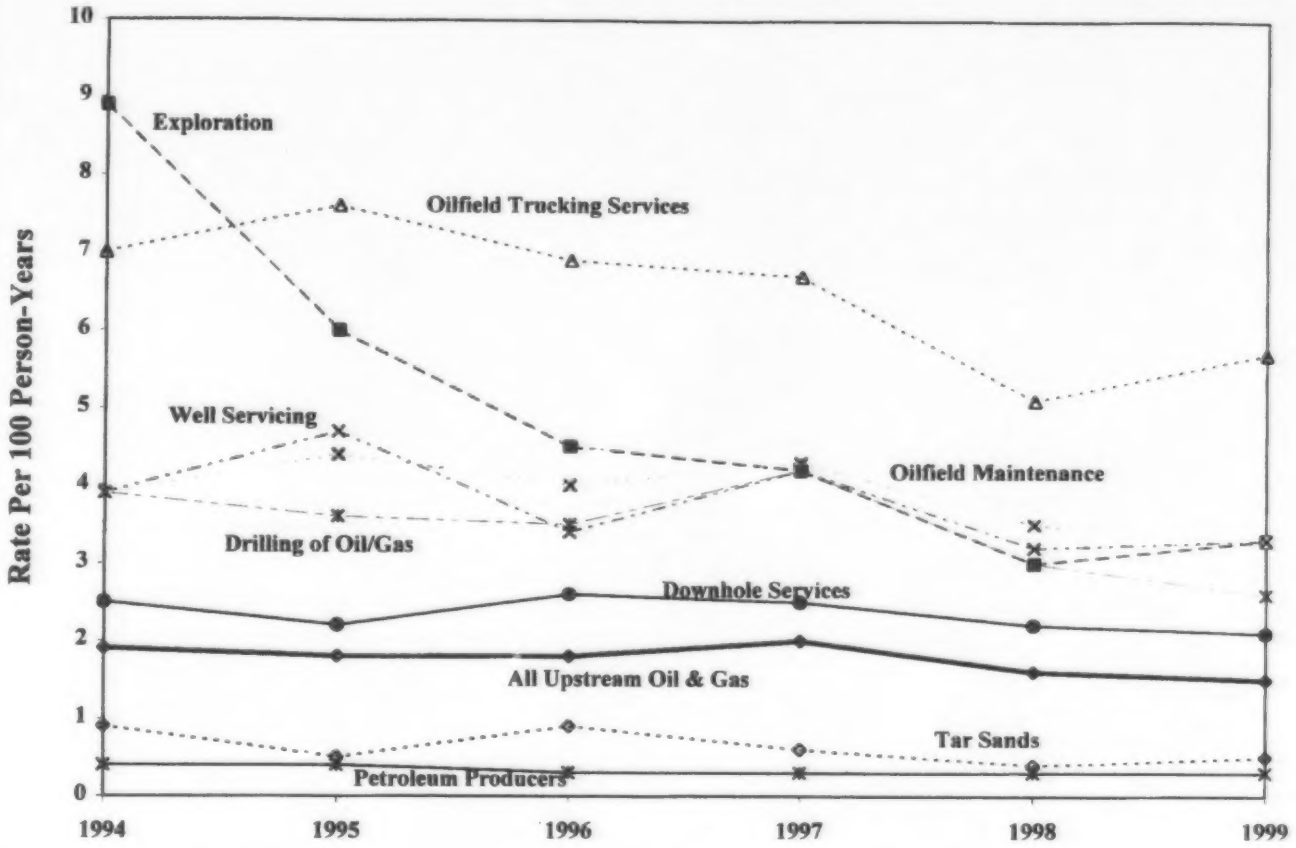
Liquid Waste Treatment & Disposal (industry # 09927)

Employers in this industry are engaged in the chemical treatment and disposal of water in sump pits located on oil and gas well drilling sites. It should be noted that employers who pump water to the drilling rig, from a nearby water source, by means of pumps and irrigation piping are also classified in this industry. The equipment used is the same as that of employers pumping water out of a sump pit, and it is part and parcel of the water system used in the drilling process.

Samples of the sump water are analysed by independent laboratories to determine what treatment program may be implemented so as to separate the solid wastes from the liquid, and to make the liquid safe for return to the environment. The treatment program must be approved by the Energy Resources Conservation Board prior to its implementation. Once the waste treatment company has applied the recommended program, they must then send in a sample of the treated sump liquid to the E.R.C.B., who must verify that the treatment was successful. Once approved, the water is pumped out of the sump pit into the surrounding environment. The solid wastes are often not harmful to the environment, and therefore left in the sump pit.

Some employers will use a mechanical system (referred to as a centrifuge) through which they pump the sump pit waste in order to separate the solids from the liquids. Chemicals required to remove any impurities from the water are added to the system. The same E.R.C.B. standards discussed above must be adhered to.

Lost-Time Claim Rates
Upstream Oil & Gas Subsectors
Alberta: 1994-1999



3.Lost-Time Claim Rates and Duration Rates

All Downhole & Other Oilfield Services

Year	# of Accounts	Cost	Person Years	Days Lost	Duration Rate	LTCs	LTC Rate
1995	1,914	$2,662,758	12,528	11,259	90	277	2.2
1996	2,139	$2,253,290	14,151	14,252	101	366	2.6
1997	2,590	$2,652,673	17,275	14,949	87	438	2.5
1998	2,942	$3,959,219	17,374	19,077	110	388	2.2
1999	3,205	$2,210,463	16,304	13,733	84	343	2.1

3.1 LTC Rates By Industry

6305-Field Production Operators

Year	# of Accounts	Cost	Person Years	Days Lost	Duration Rate	LTCs	LTC Rate
1995	694	$30,645	1,075	375	N/A	10	0.9
1996	639	$235,150	1,371	1,399	N/A	21	1.5
1997	1,058	$230,267	1,626	659	N/A	21	1.3
1998	1,197	$182,036	1,783	1,055	N/A	27	1.5
1999	1,295	$405,866	1,782	966	N/A	21	1.2

6306-Vacuum Removal of Waste

Year	# of Accounts	Cost	Person Years	Days Lost	Duration Rate	LTCs	LTC Rate
1995	292	$88,308	633	882	N/A	25	3.9
1996	320	$217,772	743	2,200	296	46	6.2
1997	415	$403,141	1,105	2,187	198	57	5.2
1998	479	$300,782	1,163	2,605	224	55	4.7
1999	489	$236,272	1,105	2,810	254	58	5.2

9900-Mud Logging

Year	# of Accounts	Cost	Person Years	Days Lost	Duration Rate	LTCs	LTC Rate
1995	71	$0	438	0	N/A	0	0.0
1996	17	$8,765	124	118	N/A	3	2.4
1997	18	$6,319	142	34	N/A	2	1.4
1998	22	$5,057	148	64	N/A	1	0.7
1999	31	$14,120	137	165	N/A	2	1.5

9902-Pressure Cleaning Services

Year	# of Accounts	Cost	Person Years	Days Lost	Duration Rate	LTCs	LTC Rate
1995	354	$320,593	1,098	2,223	202	56	5.1
1996	395	$325,555	1,121	2,403	214	57	5.1
1997	437	$265,688	1,428	2,088	146	44	3.1
1998	471	$462,280	1,327	2,764	208	53	4.0
1999	466	$274,551	1,299	1,380	106	52	4.0

9904-Rathole Drilling and Rig Anchoring

Year	# of Accounts	Cost	Person Years	Days Lost	Duration Rate	LTCs	LTC Rate
1995	47	$92,517	223	392	N/A	4	1.8
1996	53	$69,707	230	654	N/A	11	4.8
1997	63	$35,475	290	321	N/A	9	3.1
1998	59	$107,491	206	608	N/A	7	3.4
1999	62	$16,448	195	160	N/A	4	2.1

9911-Oilfield Downhole Services

Year	# of Accounts	Cost	Person Years	Days Lost	Duration Rate	LTCs	LTC Rate
1995	351	$1,992,165	8,745	5,918	68	164	1.9
1996	393	$1,059,191	10,114	6,047	60	209	2.1
1997	455	$1,373,126	12,077	7,751	64	268	2.2
1998	546	$2,601,897	12,156	10,356	85	223	1.8
1999	688	$1,059,379	11,224	6,050	54	180	1.6

9915 Well Casing Services

Year	# of Accounts	Cost	Person Years	Days Lost	Duration Rate	LTCs	LTC Rate
1995	85	$103,159	190	1,057	N/A	13	6.8
1996	96	$287,394	290	1,000	N/A	15	5.2
1997	110	$307,372	386	1,606	416	30	7.8
1998	124	$294,471	374	1,573	N/A	21	5.6
1999	135	$202,273	321	2,179	N/A	23	7.2

9921-Servicing Christmas Trees on Oil Wells

Year	# of Accounts	Cost	Person Years	Days Lost	Duration Rate	LTCs	LTC Rate
1995	5	$5,369	72	98	N/A	1	1.4
1996	7	$49,220	90	426	N/A	3	3.3
1997	9	$7,413	133	71	N/A	2	1.5
1998	10	$0	121	0	N/A	0	0.0
1999	9	$859	123	8	N/A	1	0.8

9927-Liquid Waste Treatment & Disposal

Year	# of Accounts	Cost	Person Years	Days Lost	Duration Rate	LTCs	LTC Rate
1995	15	$30,003	56	314	N/A	4	7.2
1996	19	$534	68	5	N/A	1	1.5
1997	25	$23,873	88	232	N/A	5	5.7
1998	34	$5,204	97	52	N/A	1	1.0
1999	30	$894	118	15	N/A	2	1.7

3.2 LTC Rates by Size of Employer: 1999

Size of Employer	# of Accounts	LTCs	Person - Years	LTC Rate
A: 0< PY <=1	1,779	25	907	2.8
B: 1 < PYs < 5	943	46	1,883	2.4
C: 5 <= PYs < 10	130	31	870	3.6
D: 10 <= PYs < 20	91	51	1,258	4.1
E: 20 <= PYs < 40	56	30	1,564	1.9
F: 40 <= PYs < 100	22	27	1,381	2.0
G: PYs >=100	25	133	8,440	1.6
H: Invalid	159	N/A	0	N/A
Total	3,205	343	16,304	2.1

4. Analysis of the Lost-Time Claims

4.1 Nature of Injury

LOST-TIME CLAIMS ALBERTA: 1995 TO 1999	OCCURRENCE YEAR					Total	
	1995	1996	1997	1998	1999	Number	Percent
SPRAIN, STRAIN, TEARS	105	126	192	150	126	699	38.6
FRACTURE, DISLOCATION	40	59	70	82	53	304	16.8
SURFACE WOUNDS, BRUISES	41	41	53	38	31	204	11.3
OTHER TRAUMATIC INJURIES/DISEASE	26	45	33	34	49	187	10.3
OPEN WOUNDS	24	14	33	34	25	130	7.2
BURNS	16	24	18	24	22	104	5.7
SYSTEMIC DISEASES,DISORDERS	11	15	13	14	15	68	3.8
MULTIPLE DISEASE, DISORDERS	.	15	11	5	4	35	1.9
SYMPTOMS, SIGN/ILL-DEFINED CONDITIONS	.	1	.	.	.	1	0.1
OTHER DISEASE,CONDITIONS,DISORDERS	.	.	.	.	1	1	0.1
TUMORS,CANCER	.	1	.	.	.	1	0.1
NATURE-UNKNOWN	14	25	15	7	17	78	4.3
Total	277	366	438	388	343	1,812	100.0

4.2 Type of Event/Exposure

LOST-TIME CLAIMS ALBERTA: 1995 TO 1999	OCCURRENCE YEAR					Total	
	1995	1996	1997	1998	1999	Number	Percent
OVEREXERTION	43	67	88	73	59	330	18.2
STRUCK BY OBJECTS	36	39	60	61	39	235	13.0
TRANSPORTATION ACCIDENTS	33	49	64	42	44	232	12.8
BODILY REACTION	33	32	42	42	36	185	10.2
FALL TO LOWER LEVEL	19	34	39	30	30	152	8.4
FALL ON SAME LEVEL	26	22	26	30	24	128	7.1
EXPOSURE TO HARMFUL SUBSTANCES	26	25	22	25	24	122	6.7
CAUGHT IN OBJECTS	18	21	37	24	20	120	6.6
STRUCK AGAINST OBJECTS	7	12	9	11	13	52	2.9
RUBBED OR ABRADED	7	5	9	4	3	28	1.5
OTHER FALLS	.	4	9	8	6	27	1.5
FIRES AND EXPLOSIONS	2	4	3	7	10	26	1.4
REPETITIVE MOTIONS	.	4	1	1	3	9	0.5
OTHER BODILY REACTION/EXERTION	.	1	1	2	4	8	0.4
OTHER CONTACT WITH OBJECT/EQUIP	.	.	.	6	2	8	0.4
ASSAULTS/VIOLENT ACTS BY PERSONS	.	2	.	.	1	3	0.2
OTHER ASSAULTS/VIOLENT ACTS	.	.	2	1	.	3	0.2
UNKNOWN	27	45	26	21	25	144	7.9
Total	277	366	438	388	343	1,812	100.0

4.3 Part of Body Injured

LOST-TIME CLAIMS ALBERTA: 1995 TO 1999	OCCURRENCE YEAR					Total	
	1995	1996	1997	1998	1999	Number	Percent
BACK	72	108	126	93	73	472	26.0
OTHER TRUNK	30	45	51	50	48	224	12.4
LEG(S)	29	39	34	47	45	194	10.7
MULTIPLE BODY PARTS	20	32	33	27	51	163	9.0
ANKLE(S) & FOOT(FEET)-NOT TOES	24	28	42	32	32	158	8.7
FINGER(S)	26	28	33	37	26	150	8.3
WRIST(S)/HAND(S)	19	17	34	27	15	112	6.2
OTHER HEAD	11	21	25	30	11	98	5.4
OTHER UPPER EXTREMITIES	15	21	16	12	16	80	4.4
NECK	11	9	24	11	11	66	3.6
EYE(S)	14	12	12	9	8	55	3.0
OTHER LOWER EXTREMITIES	2	4	5	8	3	22	1.2
BODY SYSTEMS	3	1	2	4	2	12	0.7
UNKNOWN	1	1	1	1	2	6	0.3
Total	277	366	438	388	343	1,812	100.0

4.4 Source of Injury

LOST-TIME CLAIMS ALBERTA: 1995 TO 1999	OCCURRENCE YEAR					Total	
	1995	1996	1997	1998	1999	Number	Percent
VEHICLES	37	58	77	53	50	275	15.2
PARTS AND MATERIALS	35	52	54	59	49	249	13.7
STRUCTURES/SURFACES	34	41	61	46	47	229	12.6
PERSONS-INJURED WORKER	33	35	43	45	41	197	10.9
CONTAINERS	19	16	36	29	17	117	6.5
OTHER SOURCES	26	20	15	20	27	108	6.0
HANDTOOLS-UNPOWERED	15	8	20	18	13	74	4.1
CHEMICAL/CHEMICAL PRODUCTS	12	16	16	14	8	66	3.6
MACHINERY	6	13	14	15	7	55	3.0
OTHER TOOLS/EQUIPMENTS	.	7	15	11	7	40	2.2
HANDTOOLS-POWERED	5	3	4	2	3	17	0.9
MINERALS-METALS/NONMETALLIC	1	2	4	3	.	10	0.6
FURNITURE AND FIXTURES	.	3	5	.	1	9	0.5
PERSONS-OTHER THAN INJURED WORKER	.	2	2	.	2	6	0.3
OTHER PLANTS/ANIMALS/MINERALS	.	.	1	2	.	3	0.2
UNKNOWN	54	90	71	71	71	357	19.7
Total	277	366	438	388	343	1,812	100.0

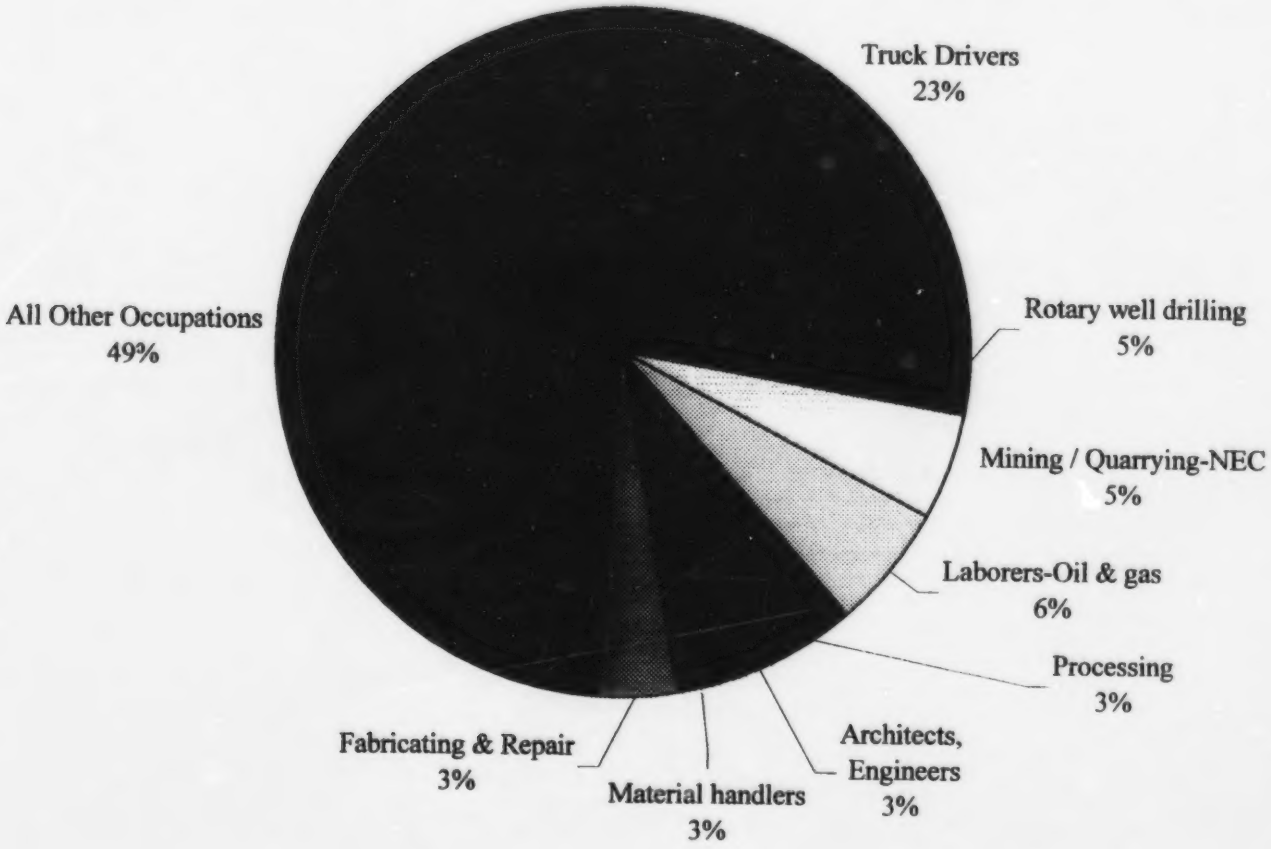
4.5 Duration of Disability

LOST-TIME CLAIMS ALBERTA: 1995 TO 1999	OCCURRENCE YEAR					Total	
	1995	1996	1997	1998	1999	Number	Percent
A: 01 Day	18	21	31	25	16	111	6.1
B: 02 Days	13	15	36	27	21	112	6.2
C: 03 - 05 Days	26	51	48	46	51	222	12.3
D: 06 - 10 Days	42	43	71	55	45	256	14.1
E: 11 - 20 Days	44	57	56	52	50	259	14.3
F: 21 - 30 Days	23	39	35	27	34	158	8.7
G: 31 Days OR More	100	122	140	138	102	602	33.2
H: Unspecified	11	18	21	18	24	92	5.1
Total	277	366	438	388	343	1,812	100.0

5. Characteristics of the Injured Worker

5.1 Occupation of Injured Worker

Occupation of The Injured Worker
1995-1999



5.2 Age of injured Worker

LOST-TIME CLAIMS ALBERTA: 1995 TO 1999	OCCURRENCE YEAR					Total	
	1995	1996	1997	1998	1999	Number	Percent
A: 15 - 19 Years	16	15	14	11	13	69	3.8
B: 20 - 24 Years	57	59	88	68	74	346	19.1
C: 25 - 34 Years	107	151	158	144	109	669	36.9
D: 35 - 44 Years	66	97	132	116	103	514	28.4
E: 45 - 54 Years	20	36	35	35	37	163	9.0
F: 55+ Years	11	8	11	14	7	51	2.8
Total	277	366	438	388	343	1,812	100.0

5.3 Length of Time Employed

LOST-TIME CLAIMS ALBERTA: 1995 TO 1999	OCCURRENCE YEAR					Total	
	1995	1996	1997	1998	1999	Number	Percent
A: LESS THAN 1 MONTH	30	22	41	34	23	150	8.3
B: 1 MONTH TO < 6 MONTHS	71	73	113	92	69	418	23.1
C: 6 MONTHS TO < 1 YEAR	63	39	55	57	26	240	13.2
D: 1 YEAR OR MORE	78	129	119	109	125	560	30.9
E: TIME UNSPECIFIED	35	103	110	96	100	444	24.5
Total	277	366	438	388	343	1,812	100.0

5.4 Gender of Injured Worker

LOST-TIME CLAIMS ALBERTA: 1995 TO 1999	OCCURRENCE YEAR					Total	
	1995	1996	1997	1998	1999	Number	Percent
MALES	273	353	427	375	329	1,757	97.0
FEMALES	4	5	5	7	9	30	1.7
UNSPECIFIED	.	8	6	6	5	25	1.4
Total	277	366	438	388	343	1,812	100.0

6. Cost of Claims and Employer Premiums

Sub-Sector 5- Downhole & Other Oilfield Services

	OCCURRENCE YEAR				
	1995	**1996**	**1997**	**1998**	**1999**
TRANSACTION YEAR					
1995	$1,658,475				
1996	$1,046,597	$1,856,882			
1997	$406,390	$1,016,338	$2,262,376		
1998	$946,332	$894,169	$1,108,699	$2,812,517	
1999	$96,559	$827,375	$428,341	$1,652,034	$2,417,067
Total Cost	$4,154,352	$4,594,763	$3,799,416	$4,464,551	$2,417,067
Total Premiums	$9,492,918	$9,677,484	$11,712,595	$8,281,236	$6,293,723

The above cost of lost-time claims and premiums are for the five-year period 1995 through to 1999. The data is as at July 6, 2000.

The claim cost reflects only paid cost on lost-time claims that occurred in the five-year period. These cost are tracked by year of occurrence and the year that the costs were transacted.

The premiums are the total premiums paid by employers for each year.

7. Occupational Fatalities

An occupational fatality is the death of a worker that results from a work-related incident or exposure. Alberta Human Resources and Employment classifies occupational fatalities into three general types: motor vehicle incident, workplace incident and occupational diseases. Each is described in detail below.

Motor Vehicle Incident

Motor vehicle incidents typically involve highway vehicles operating on public roads in which the fatally injured worker was either the driver or a passenger. This category also includes fatalities involving aircraft crashes, train crashes, helicopter crashes, etc.

Workplace Incident

Fatal workplace incidents consist of cases in which the worker dies at a work site, or as a result of injuries sustained at a work site. It is this type of fatality that Alberta Human Resources and Employment may be responsible for investigating.

Occupational Diseases

Occupational disease fatalities consist mostly of recognized occupational disease, that is, disease known to be primarily or exclusively work-related (e.g. asbestosis, black lung disease). Occupational diseases are frequently diagnosed many years after the initial or crucial exposure to the toxic substance, and in such cases it is very difficult to determine when the fatal exposure occurred. Thus, the occupational disease category should not be interpreted to reflect present work site hazardous conditions or exposures.

Each year the Workers' Compensation Board (WCB) accepts some occupational fatality claims for compensation. Occupational fatality claims that were accepted in a particular year may include fatalities from prior years.

Description of Oilfield Downhole ServicesWorkplace Fatalities Accepted by the WCB

Year	Occupational Disease		Motor Vehicle incident		Workplace Incident		Total	
	N	%	N	%	N	%	N	%
1995	0	0.0	3	75.0	1	25.0	4	100
1996	0	0.0	1	33.3	2	66.7	3	100
1997	0	0.0	4	80.0	1	20.0	5	100
1998	0	0.0	3	60.0	2	40.0	5	100
1999	0	0.0	1	25.0	3	75.0	4	100
Total	0	0.0	12	57.1	9	42.9	21	100

8. OHS Investigated Occupational Fatalities: 1995 to 1999

YEAR: 1995 FILE: 0821
OCCUPATION: Swamper AGE: 18
INDUSTRY: Oilfield Downhole Services
EXPERIENCE: 4 months

DESCRIPTION: The lease owner of the site, had completed the drilling of an oilwell at the location of the incident and had contracted the services of a consultant to arrange for a service rig to come on the site to bring the well into production. The equipment was delivered to the site when the incident occurred. Two workers, a truck driver/picker operator and his helper (swamper) were unloading a set of service rig pipe racks from a flatbed trailer. The driver lowered the picker's outriggers, positioned the boom and lowered the hook to get ready to hook up to the pipe racks. The driver was storing the tie down chains and boomers on the rear of the tractor cab. The swamper climbed up on the flatbed and removed the rear tie down chain on the load. The front tie down chain fell to the ground and the right pipe rack tipped off the load. The swamper tried to grab the rack which was tipping. The right pipe rack (which was attached to the left rack by a chain) fell off the trailer pulling the left rack and the swamper with it. The pipe racks fell and landed on the swamper causing fatal injuries.

YEAR: 1997 FILE: 0872
OCCUPATION: Truck Driver AGE: 33
INDUSTRY: Field Production Operators
EXPERIENCE: one week with company

DESCRIPTION: The driver was employed with the trucking company to haul methanol to gas leases. The driver attempted to enter the gas lease and his truck became stuck. The lease operator radioed for a caterpillar to pull the truck out. The lease operator and the driver unloaded the methanol and the former left to perform other duties. The cat operator arrived and proceeded to unload the cat off the truck and then backed down the road a short distance. He moved the cat forward through a ditch and a grassy area to the front of the methanol truck. As he manoeuvred the cat in front of the truck, he saw a dark form on the grass. Upon checking, he discovered that the truck driver had been run over by the caterpillar.

YEAR: 1998 FILE: 0909
OCCUPATION: Cement Acid Pumper/Driver AGE: 29
INDUSTRY: Oilfield Downhole Services
EXPERIENCE: 11 months with employer

DESCRIPTION: A worker was found dead in a trench. The worker was one of the two individuals monitoring a pipeline freeze plug operation. Between 25 and 45 minutes after the worker entered the trench, he was found frozen by the other worker and a relief crew. The reason for the worker entering the trench is not known. The purpose of the trench was to expose a section of oil pipeline so that it could be tested for leaks. The pipeline was filled with water to prepare for the leak test. Liquid nitrogen was flowing from a nearby bulk truck through a freeze plug jacket surrounding the pipe. The cold liquid nitrogen on the outside of the pipe froze the water inside the pipe, creating a plug of ice. The freeze plug process created an atmosphere cold enough to solidly freeze the soil in the base of the trench.

YEAR:	1999	FILE: 0943
OCCUPATION:	Operations Manager	AGE: 48
INDUSTRY:	Oilfield Downhole Services	
EXPERIENCE:	25 years	
OCCUPATION:	Labourer	AGE: 19
INDUSTRY:	Oilfield Downhole Services	
EXPERIENCE:	3 months	

DESCRIPTION: An Operations Manager and a labourer were welding an overflow pipe on top of a tank that contained residual flammable materials. During the welding operation the welding spark ignited the flammable materials causing the tank to explode. Both the Operations Manager and the labourer received fatal injuries as a result of the explosion.

There was one fatality in 1999 that is still under investigation

Appendix A: Terms, Definitions, and Formulas

Lost-Time Claim

A lost-time claim (LTC) is a claim for an occupational injury or disease which disables the worker beyond the day of injury. Included are claims for which wages compensation are paid, permanent disability claims, fatalities, and cases in which the injured worker is assigned light duties or other modified work.

Person-Years

Person-year estimates are calculated from wage and payroll data provided by account holders to the WCB. Alberta Labour uses these data to estimate. An average industry wage, and uses the average industry wage and employer payroll data to estimate person-years foe each employer and each industry. One person-year i.e. equivalent to one full-time worker working for one year, and can be assumed to equal 2,000 hours worked.

LTC Rate

The lost-time claim (LTC) rate is calculated by dividing the number of lost-time claims by the person-year estimate, and multiplying the result by 100. The LTC rate represent the probability or risk of disabling injury or disease to a worker during a period of one year's work. Comparisons of LTC rates between industries, or between years, can be used to indicate increases, decreases, or differences in this risk.

$$\text{LTC Rate} = \frac{\text{Number of LTCs X 100}}{\text{Estimated Person-years}}$$

Duration (Days Lost)

The duration of disability is the number of days following the injury or disease for which the worker was disabled, and unable to perform normal work duties. This information is obtained for this report from data on compensation days paid on each claim from WCB. Alberta Labour obtains these data on March 31 of the year following the claim year, and does not update the information, even though many injured workers continue to be disabled beyond this date. As a result, the duration information reported here underestimates the true impact of lost-time injury and disease.

Duration Rate

The duration rate is calculated by dividing the number of work days lost (disability days) by the person-year estimate, and multiplying by 100. The result is expressed as "days lost per 100 person-years worked", and indicates, in part, the economic impact of occupational injury and disease. Duration rates are not recommended as reliable indicators of full economic cost. In addition, readers are warned that duration rates are highly unstable when based on only a few lost-time claims; it is recommended that the duration rate not be calculated based upon fewer than 30 lost-time claims.

$$\text{Duration Rate} = \frac{\text{Disability Days X 100}}{\text{Estimated Person-Years}}$$

WCB Accepted Fatality

An occupational fatality is the death of a worker which result from a work-related incident or exposure and which has been accepted by the WCB for compensation. A fatality is counted in the year it is accepted.

NEC

Means "Not Elsewhere Classified"

UNS

Means "Unspecified"

Appendix B: Upstream Oil and Gas 1999 Industry Codes

Sub-Sector 1: **Exploration**
Industries: 09200~Seismic Geophysical/Mineral Exploration
09201~Shot Hole Drilling

Sub-Sector 2: **Oilfield Maintenance and Construction**
Industries: 06304~Oilfield Construction and/or Maintenance

Sub-Sector 3: **Well Servicing With Service Rigs**
Industries: 09903~Well servicing with Service Rigs including Power Swivels

Sub-Sector 4: **Drilling of Oil and gas Wells**
Industries: 09600~Drilling of Oil & Gas Wells

Sub-Sector 5: **Downhole & Other Oilfield Services**
Industries 06305~Field Production Operators
06306~Vacuum Removal of Waste
09900~Mud Logging
09902~Pressure Cleaning Services
09904~Rathole Drilling and Rig Anchoring
09911~Oilfield Downhole Services
09915~Well Casing Services
09921~Servicing Christmas Trees On Oil Wells
09927~Liquid Waste Treatment & Disposal

Sub-Sector 6: **Tar Sands**
Industries: 06600~Mining & Processing of Bituminous Sand
06601~Research/Development, Oil Sands and Heavy Oil Recovery

Sub-Sector 7: **Oil & Gas Exploration/Development**
Industries: 06300~Oil and Gas Exploration & Development-Upstream Operations

Sub-Sector 8: **Oilfield Trucking Services**
Industries: 50720~Oilfield Trucking Services